

Las Conchas Azules (The Blue Shells): Father Kino, abalones, and the Island of California

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The First International Conference on the Zoogeography of Northeast Pacific Abalones was convened by the Italian Jesuit, Father Eusebio Francisco Kino, 30 April–1 May 1700. It was held at Bac ($\approx 32^{\circ} 06' 20''$ N; $111^{\circ} 00' 30''$ W), the largest Sobaipuri village on the Río Santa Cruz, in the Spanish Gobernación of Nueva Vizcaya. Also in attendance were members of the Pima (= O'odham), Opata, and Coccomaricopa nations, discussing the origin of abalone shells obtained in trade from the Yuma and Cutgane peoples of the Colorado River. These beautiful items were called the blue shells (*las conchas azules*).

Studies of molluscan biogeography are dependent upon good mapping and correct identification of localities. Numerous cases in the literature report erroneous type localities, and misnamed or improperly described collecting areas. Tenacious beliefs in a mythical place can replace or suppress topographic evidence. This paper describes a curious instance of how proper documentation of the distribution of a mollusk changed the maps of an area.

"I hold it to be very certain and proven that the whole kingdom of California, discovered on this voyage, is the largest island known or which has been discovered up to the present time" (Father Antonio de la Ascención, from his journal written during Vizcaino's 1602 voyage along the coasts of the modern three Californias, from Cabo San Lucas to Monterey, although they never found its northern terminus). Earlier, Juan Rodríguez Cabrillo had made the first voyage along the Pacific coast (1542–1543), reaching Cape Mendocino, seeing land during the entire journey. But the mythical Calafia would not disappear. Despite Francisco de Ulloa's (1539) sailing the Sea of Cortez entirely to its northern end, and Juan de Oñate's 1604–05 descent of the Colorado River to a view of the Sea of Cortez, in the 1500 and 1600s the commonly held (and mapped) European belief was in the insular status of California.

Thirty years of explorations, missionary activities and mapping throughout Lower California and the Pimería Alta by Father Eusebio Kino, S.J., dealt the final and complete blow to the "island of California."

Father Kino's two missionary efforts in California at La Paz (Spring–Summer 1683) and San Bruno (October 1683–May 1685) were religious failures. However, during his 20 months at Misión San Bruno (north of present-day Loreto), he made several expeditions westward trying to cross the steep and forbidding barrier of the Sierra de la Gigante. Having gotten directions from the regional Cochimí inhabitants, he traversed passes, arroyos and stream beds that finally led him to the shores of the Pacific Ocean on 30 December 1684, his third attempt. The explorers named the site Bahía Año Nuevo, but today it is known as San Gregorio (approximately $26^{\circ} 03'$ N; $112^{\circ} 17'$ W). Meandering along the beach, he chanced upon some large, beautiful blue shells.

Returning to mainland Mexico, he was assigned to missionary work in the Alta Pimería (north-central Sonora and southwest Arizona). While laboring among the various Pima peoples for years, he harbored a zealous concern for the establishment and provisioning of missions in Lower California.

During 21–23 February 1699, while preaching to the Pimas and Yumas at San Pedro (near the junction of the Gila and Colorado Rivers), Kino first saw the blue abalone shells on the mainland, which he had originally seen 14 years earlier on the Pacific coast of Lower California. He wrote in his journal, "These natives of San Pedro in the two days when we were with them gave us various beautiful blue shells, which, so far as I know, are found only on the opposite or western coast of California. Afterward it occurred to me that not very far distant there must be a passage by land to near-by California" (Bolton, 1919: 195–196; hereafter cited as MPA) which would provide a possible land route to provision the missions of Lower California.

He had previously made expeditions to the northern Gulf, and had seen "plainly that that arm of the sea kept

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getting narrower,” and even “descried most plainly both with a telescope and without a telescope the junction of these lands of New Spain with those of California, the head of this Sea of California.” When the natives gave him the blue shells, “still it did not occur to me that those blue shells must be from the opposite coast of California and the South Sea, and that by the route by which they had come thence, from there to here, we could pass from here thither, and to California” (MPA: 229–230).

A few months later, Kino took 10 Pimas and 53 mules and horses north from his home mission at Dolores to found Misión San Xavier del Bac (near present-day Tucson). He dispatched various messengers throughout the surrounding nations of indigenous people, “to learn with all possible exactness in regard to the blue shells and the passage by land to California” (MPA: 234–235).

The participants at this First International Conference on the Zoogeography of Northeast Pacific Abalones all asserted that these blue shells “came from the opposite coast of California and from the sea which is ten or twelve days’ journey farther than this other Sea of

California, on which there are shells of pearl and white, and many others, but none of those blue ones” (MPA: 237–238).

After several more expeditions to the Gulf of California, he had assembled his evidence of the “peninsularity” of Lower California: presence on the mainland of the blue shells from the west coast of the peninsula, sightings from the junction of the Gila/Colorado Rivers showing no intervening body of water to separate the two regions, and statements of the indigenous people living near the head of the Gulf.

In late 1701, he redrew his earlier 1695 “insular” map (Figure 1). After it was printed in 1705 (Figure 2), it became one of the best known maps of northern New Spain. That Lower California was a peninsula was never again in doubt.

Joshua L. Baily, Jr. (1935), wrote that “the first collection of west coast shells was the work of Father Eusebio Francisco Kino,” predating the conchological efforts of Cook and Martyn (in 1784), Dixon (1789) and Eschscholtz (1822), which had been cited by Philip P. Carpenter as the first collectors. Baily based his comments on Eldridge (1915), apparently unaware of Bolton’s publication of MPA. Although writing that “We do not even know what the shells were, for his description—‘beautiful blue shells’—is too meager to be considered anything but a *nomen nudum*,” he tried to “make a pretty good guess” (Baily, 1935: 75). Baily identified the species as *Olivella biplicata* (Sowerby, 1825) for three reasons:



Figure 1. Father Eusebio Francisco Kino's 1695 map, showing Lower California as an island (from Burrus, 1965).



Figure 2. Father Kino's 1701 map (first published in 1705) showing Lower California as a peninsula (from Burrus, 1965).

- It is “the most popular shell for wampum purposes among the Indians of Arizona today”;
- “The lower part of the columella is almost universally azure tinted”; and
- Its geographic distribution (ranging southward along the California Pacific coast to Bahía Magdalena; absent from the Gulf).

However, statues of Kino in Hermosillo, Sonora, Mexico, and in his hometown of Segna, Italy, depict him on horseback, holding an abalone shell (illustrated in Polzer, 1998: 192–194). The plaza mural near his gravesite at Magdalena de Kino (Figure 3) shows him with an abalone shell in his hand. I concur with historians, artists, civic leaders and others that the “beautiful blue shells” were abalone:

- There are several species of *Olivella* occurring in the Gulf of California, which have distinct purple apertural coloring, e.g., *Olivella dama* (Wood, 1828) = *Oliva purpurata* Swainson, 1831). In the 16th century, relying on a 14-year-old memory, an untrained amateur shell collector such as Kino could not have distinguished between different species of *Olivella* with

similar whitish or light gray outer coloration, and purple on the inside.

- Size matters. Abalones are impressive, large shells, much bigger than the 20–27 mm long *Olivella biplicata*. Kino had sent Father Marcos Antonio Kappus (Rector of the College of Matape) several of his “blue shells,” for which Kappus wrote him, “I esteem the blue shells, and especially the large one, which is a truly rare piece” (MPA: 259–260). The description in Kino’s (MPA) and Manje’s (Burrus, 1971) journals of these expeditions clearly emphasize both their uniqueness (which would not be the case among similarly colored *Olivella* congeners) and size.
- Eighteenth Century Accounts. While serving in Baja California from 1737–1768, Miguel del Barco investigated the plants, animals and minerals of the peninsula. He wrote about the blue shells: “On the exterior coast there are found some shells, proper to it, which are perhaps the most beautiful in the world. This is because their luster usually is greater and finer than that of the finest mother-of-pearl. These shells are darkened and covered with a pleasant and extremely vivid blue. . . These shells are somewhat deeper than

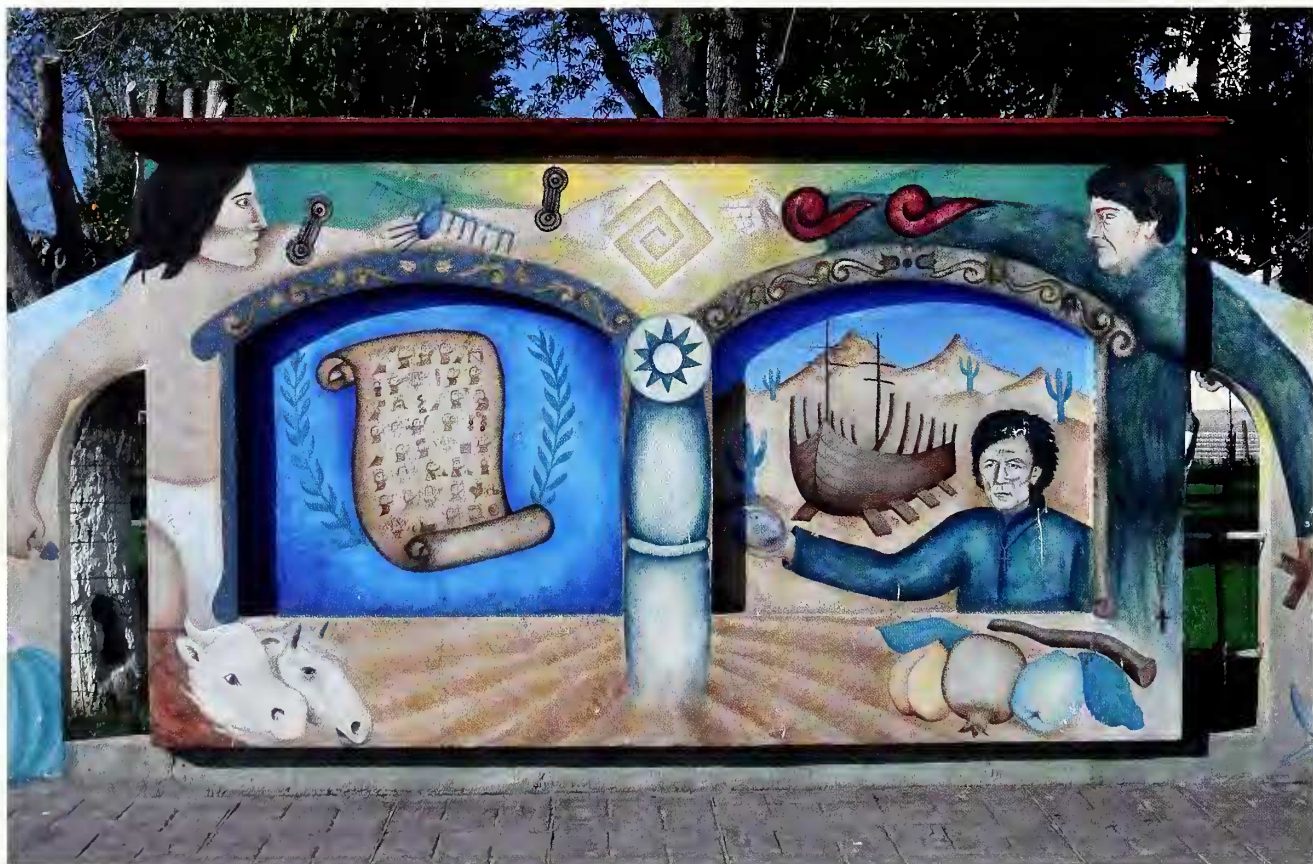


Figure 3. Mural of Father Kino, holding an abalone shell, with depictions of cattle and crops that represent farming skills he introduced to the Pima nations, and tongues of flame symbolic of his linguistic skills and missionary endeavors. Monument at the Main Plaza in Magdalena de Kino, Sonora, Mexico.

ordinary, and on one side only they have five or six round holes" (Barco, 1980: 249–250).

- Ignacio Tirsch, missionary in Lower California from 1762–1768, made the only eyewitness drawings of the plants and animals of the peninsula in Jesuit times. His drawings of California sea shells (Tirsch, 1972) clearly illustrate an abalone, labeled "*concha azul*."
- Historians have considered these magnificent shells to be abalone (e.g., Burrus, 1971: 114; Note 5, Barco, 1980: 249; and Polzer, 1998: 66–70).
- The most likely species-level identification of the specimen is *Haliotis fulgens* Philippi, 1845, which is characterized by an "interior highly iridescent, chiefly blue with overtones of pink and green" (McLean, 1978).

Abalones are distinct, and are obviously present on the Pacific Californian coastline, and similarly absent in the Gulf of California. Father Kino's training as a cartographer, mathematician, and scientist served him well. His studies on Comet Kirch (Kino, 1681), although unabashedly Aristotelian in its views, were one of the earliest scientific works published by an European in the Americas. Because of his astute observations and reasoned questioning, abalones, the geography of California, and a Jesuit priest are inextricably interwoven.

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